

REMARKS

The present invention is directed to a polyester different-contraction commingled yarn produced by polyester polymers with satisfactory color tone and excellent moldability. The polyester different-contraction commingled yarn of the present invention is a commingled yarn comprising two different types of filaments with different boiling water shrinkage ratios, comprising a polyester polymer as the principal component.

This Amendment is filed in response to the non-final Office Action dated October 18, 2007. The amendments and how they respond to the rejections set forth in the Office Action are explained below in detail. Accordingly, favorable reconsideration on the merits and allowance is respectfully submitted to be proper.

The Office Action indicated: that claims 1, 2, 5 - 12, 16, 17, 19 and 20 are rejected under 35 U.S.C. § 103(a); that claims 1 - 6 are rejected on the grounds of non-statutory obviousness-type double patenting; and that claims 1 - 6 are further provisionally rejected on the ground of non-statutory obviousness-type double patenting.

In the present Amendment, claim 1 has been amended to recite that Component (A) comprises a titanium compound selected from the group consisting of reaction products of titanium alkoxides of general formula (I) with aromatic polycarboxylic acids represented by general formula (II). No new matter has been added. Entry of the Amendment is respectfully submitted to be proper. Upon entry of the Amendment, claims 1 - 20 will be all the claims pending in the application.

I. Response to Election/Restriction

The Examiner has required Applicant to elect a species for examination. According to the Examiner, the application contains more than one species of the generic invention and the aforementioned species assertedly lack unity of invention under Rule 13.1. Per the Examiner, Applicant is required to confirm the earlier telephonic election of elect a single species selected from Species (I) and II below, and identify the claims readable on the elected species.

Species (I)- Polyester yarn obtained by polycondensation process catalyzed by catalyst of mixture (1).

Species (II)- Polyester yard obtained by polycondensation process catalyzed by catalyst of reaction product (2).

Applicant affirms the species election of Species (I), claims 1-2, 5 - 12, 16-17, and 19-20, drawn to polyester yard obtained by polycondensation process catalyzed by catalyst of mixture (1).

II. Response to Rejection Under 35 U.S.C. § 103(a)

Claims 1, 2, 5 - 12, 16, 17, 19 and 20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,965,919 ("Fujita") in view of U.S. Patent 6,593,447 ("Yamamoto") and in further view of U.S. Patent 4,254,018 ("Kowallik"). Particularly, the Examiner asserted that Fujita discloses polyester commingled yarn comprising at least two types of filaments with different boiling water shrinkage ratio values.

It was conceded in the Office Action that that Fujita fails to disclose (1) a specific method for polymerization or the polymer, and (2) the specific catalyst recited in present claim 1. Further, the Office Action admitted that Yamamoto does not disclose the use of a phosphorus

compound of Formula (III). However, the Office Action took the position that it would have been obvious for one having ordinary skill in the art to obtain polyester fiber structures by the polymerization process disclosed in Yamada in view of Yamamoto, which teaches that the polyester fiber can be obtained from a polyester produced by polycondensation process, wherein the catalyst comprises the reaction product of a titanium compound, an aromatic polyfunctional carboxylic acid, and a phosphorus compound.

Applicant traverses and respectfully request reconsideration and withdrawal of the rejection in view of the following remarks.

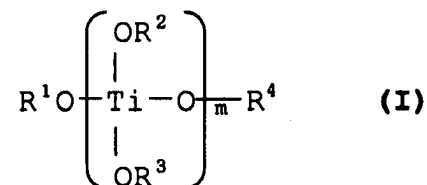
Present claim 1 is directed to:

A polyester different-contraction commingled yarn comprising two different types of filaments with different boiling water shrinkage ratios, comprising polyester polymer as the principal component individually, wherein

the polyester polymer is one produced by polycondensation of an aromatic dicarboxylate ester in the presence of a catalyst, the catalyst comprises at least one ingredient selected from among mixture (1) and reaction product (2) below,

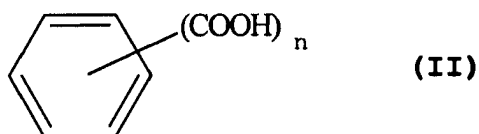
the mixture (1) is a mixture of the following components (A) and (B):

(A) a titanium compound component comprising at least one compound selected from the group consisting of (b) reaction products of titanium alkoxides of general formula (I)



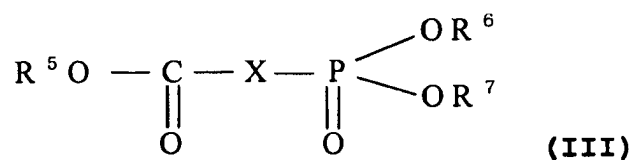
wherein R^1 , R^2 , R^3 and R^4 each independently represent one species selected from alkyl groups having 1 to 20 carbon atoms and phenyl group, m represents an integer of 1-4, and when m is an integer of 2, 3 or 4, the two, three or four R^2 and R^3 groups may be the same or different;

with aromatic polyvalent carboxylic acids represented by the following general formula (II):



wherein n represents an integer of 2-4
 or their anhydrides, and

(B) a phosphorus compound component comprising at least one compound represented by the following general formula (III):



wherein R^5 , R^6 and R^7 each independently represent alkyl groups having 1 to 4 carbon atoms, and X represents at least one species selected from among - CH_2 - group and - $\text{CH}_2(\text{Y})$ group (where Y represents phenyl group),

the catalyst mixture (1) is used with a mixing ratio such that the ratio (%) MTi of the millimoles of titanium element in the titanium compound component (A) with respect to the number of moles of the aromatic dicarboxylate ester and the ratio (%) Mp of the millimoles of phosphorus element in the phosphorus compound component (B) with respect to the number of moles of the aromatic dicarboxylate ester satisfy the following expressions (i) and (ii):

$$1 \leq \text{Mp}/\text{MTi} \leq 15 \quad (\text{i})$$

$$10 \leq \text{Mp} + \text{MTi} \leq 100 \quad (\text{ii}),$$

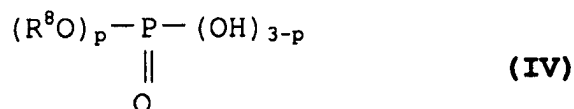
and the reaction product (2) is the reaction product of the following components (C) and (D):

(C) a titanium compound component comprising at least one compound selected from the group consisting of:

(c) titanium alkoxides represented by formula (I) above and

(d) reaction products of titanium alkoxides of general formula (I) above with aromatic polyvalent carboxylic acids represented by general formula (II) above or their anhydrides, and

(D) a phosphorus compound component comprising at least one phosphorus compound represented by the following general formula (IV):



wherein R^8 represents alkyl group having 1 to 20 carbon atoms or aryl group having 6 to 20 carbon atoms, and p represents an integer of 1 or 2.

Fujita discloses a different-contraction commingled yarn. Fujita does not teach or suggest how cloth fluffing and deep dyeing properties can be improved in the different-contraction commingled yarn defined in the presently claimed invention.

Next, Yamamoto discloses the use of a reaction product of a specific titanium compound and a specific phosphorus compound as catalysts for the polyester. However, the phosphorus compound is completely different from those used in the present invention. Furthermore, Yamamoto does not describe how a commingled yarn having good color tone can be obtained.

Kowallik merely discloses a phosphorus compound as a heat stabilizing agent for polyester. It does not teach or suggest how a cloth fluffing and deep dyeing property can be improved in such a different-contraction commingled yarn.

For the above-mentioned reasons, the cited references even considered together, do not teach, suggest, motivate, or otherwise provide reason by which a person of ordinary skill in the art would be led to derive a polyester having different-contraction commingled yarn comprising two different types of filaments with different boiling water shrinkage ratios, where the polyester is produced by polycondensation in the presence of a catalyst comprising a mixture of (A) a

titanium compound component and (B) a phosphorus compound as recited in present claim 1.

The instant inventive polyester provides a high quality commingled yarn having good color tone and exhibiting less cloth fluffing despite the yarn being composed of filaments having different properties. Accordingly, claim 1 is patentable over Fujita in view of Yamamoto and in further view of Kowallik.

Claims 2, 5 -12, 16, 17, 19 and 20 depend from claim 1 either directly or indirectly and are therefore patentable over the cited art for at least the above-mentioned reasons. Withdrawal of the rejection is respectfully requested.

III. Response to Double Patenting Rejections

Claims 1 - 6 were rejected on grounds of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 - 6 of U.S. Patent 7,087,299 and over claims 1 - 8 and 20-21 of U.S. Patent 7,189,797 in view of Fujita, Yamamoto and Kowallik.

Applicant files concurrently herewith a Terminal Disclaimer to obviate the double patenting rejections over the above-mentioned patents.

IV. Response to Provisional Obviousness-type Double Patenting Rejections

Claim 1 - 6 are **provisionally** rejected on the grounds of nonstatutory obviousness-type double patenting rejection as assertedly being unpatentable over claims 1 - 20 of co-pending Application No. 10/541,574, claims 1 - 15 of co-pending Application No. 10/535,419, and claims 1 - 16 of co-pending Application No. 10/540,880.

Applicant respectfully requests that these provisional rejections be held in abeyance until allowable subject matter has been identified in one of the applications.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited.

If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the local Washington, D.C. telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

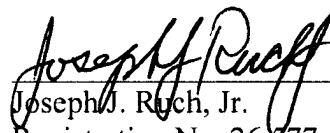
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